FOUR NEW SPECIES OF LAND SNAILS FROM THE EASTERN UNITED STATES

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ABSTRACT

Mesodon orestes *Hubricht (Polygyridae) from Waterrock Knob, Haywood Co., North Carolina;* Paravitrea mira *Hubricht (Zonitidae) from near Council, Buchanan Co., Virginia;* Paravitrea toma *Hubricht (Zonitidae) from near Maysville, Madison Co., Alabama; and* Helicodiscus lirellus *Hubricht (Endodontidae) from near Lexington, Rockbridge Co., Virginia are described as new. The taxonomic value of the teeth in* Helicodiscus *is discussed.*

Mesodon orestes *new species*
Figs. 1-3

Description: Shell imperforate, depressed, conoid-globose, thin, dull, pale olive-brown; sutures deeply impressed; whorls 5, rather convex, the last rounded but with the periphery above the middle; base convex, excavated in the umbilical region, constricted behind the lip; aperture oblique, lunate, lip broadly reflected, thickened, white, appressed over the umbilicus; a small perietal tooth sometimes present; nuclear whorl with fine radial striae, becoming gradually stronger, body whorl with distinct but low rib striae; second to fourth whorls with fine irregularly placed pits; body whorl with numerous distinct spiral engraved lines; epidermis distinctly wrinkled radially between the striae.

Height 10.5 mm., diameter 17.7 mm., whorls 5.0 Holotype.
Height 11.4 mm., diameter 18.3 mm., whorls 5.3 Paratype.
Height 9.4 mm., diameter 14.7 mm., whorls 5.0 Paratype.

Distribution: North Carolina: (type locality) Haywood Co.: 6200 ft., Waterrock Knob, Blue Ridge Parkway, holotype 232583, and paratype 232582 Univ. of Michigan Mus. Zool.; other paratypes 40465, collection of the author.

Remarks: Mesodon orestes resembles *M. wheatleyi* (Bland) most closely, but differs in having distinct spiral engraved lines, rather than short hairs. From *M. ferrissi* (Pilsbry) it differs in being smaller, in having more spirally engraved lines, in having pits rather than papillae, and in having the epidermis distinctly wrinkled between the striae.

Paravitrea mira *new species*
Figs. 4-6

Description: Shell large for the genus, subhyaline, glossy, pale amber colored, 8.5 whorls; umbilicate, the umbilicus funnel-shaped, contained about 6 to 6.5 times in the diameter of the shell; spire low dome shaped, sutures moderately impressed, whorls somewhat flattened, base somewhat flattened, excavated around the umbilicus; last whorl slowly expanding behind the lip; lip thin, aperture oblique, lunate; in the last whorl there are usually two rows of rather large teeth, in immature shells there are 3 teeth in each row, in adults the inner tooth is intermittently absent; sculpture of irregularly spaced radial grooves above, becoming obsolete below.

Height 3.9 mm., diameter 6.3 mm., umbilicus diameter 1.0 mm., umbilicus diameter one whorl in 0.5 mm., 8.5 whorls. Holotype.

Distribution: Virginia: (type locality) Buchanan Co.: ravine, 2.5 miles west-southwest of Council, holotype 232584, and paratypes 232585 UMMZ., other paratypes 42109, collection of the author; low ground near creek, 2.2 miles southwest of Vansant. Dickenson Co.: ravine, 2 miles southeast of Birchleaf. *Kentucky:* Pike Co.: wooded hillside, 1.7 miles west of Meta.

Remarks: Paravitrea mira is related to *P. reecei* Morrison and *P. tridens* Pilsbry. It differs from both in its larger size, *P. tridens* is toothless in the adult. Immature shells might be mistaken for *P. reecei* but the teeth are smaller in that species.

Paravitrea toma *new species*
Figs. 7-9

Description: Shell small, pale amber, subhyaline, glossy; spire low dome-shaped, sutures shallow, sculpture of numerous irregularly spaced radial grooves, distinct above but becoming weaker below; periphery somewhat flattened in immature shells, becoming more rounded at maturity; umbilicus deep and well-like, exhibiting all the whorls, contained over 5 times in the diameter of the shell; base flattened and excavated around the umbilicus; whorls slowly expanding, last whorl expanding more rapidly; aperture lunate, oblique; lip thin, simple; teeth absent at all stages of growth.

Penis very large, top-shaped, lower ¾ths rather thin walled, upper part thick walled; epiphalis joining at base of upper chamber, about as long as the penis, enlarging slowly distally to an abruptly rounded end; duct attached to epiphalis a little before the end; penial retractor muscle attached below the summit.

Height 2.6 mm., diameter 4.8 mm., umbilicus diameter 0.9 mm., 6.5 whorls. Holotype.

Distribution: Alabama: (type locality) Madison Co.: base of Sharp Mtn., near Sneeds Spring, Sharps Cove, northeast of Maysville; holotype 232586, and paratype 232587 UMMZ., other paratypes 29664, collection of the author; near Aladdin Cave, 7 miles northeast of Maysville. Jackson Co.: limestone hillside, 1.7 miles northeast of Princeton.

Remarks: Paravitrea toma is most closely related to *P. seradens* Hubricht, differing in the complete absence of teeth at all stages of growth. It also resembles *P. conecuhensis* (Clapp) in size and shape but that species has pairs of teeth in its immature stages.

Helicodiscus lirellus *new species*
Figs. 10-12

Description: shell discoidal or nearly so; whorls 4.5 to 5, pale greenish yellow, dull, subtranslucent; umbilicus wide and shallow, showing all of the whorls, occupying about 45% of the diameter of the shell; whorls somewhat flattened, slowly increasing, sutures deep, impressed; sculptured with coarse growth wrinkles and very fine, spiral threads, 15 to 18 on the body whorl; aperture lunate, the peristome thin; within the aperture there are 2 pairs of teeth on the outer and basal walls, these teeth radially elongate, and distinctly separated; alternating with these are 2 teeth on the parietal wall, the parietal teeth in front of the teeth on the outer and basal walls; these teeth are present at all stages of growth, the back set being absorbed as a new set is added near the aperture.

Height 1.8 mm., diameter 4.4 mm., umbilicus diameter 1.9 mm., aperture height 1.4 mm., aperture width 1.3 mm., 5 whorls. Holotype.

Distribution: Virginia: (type locality) Rockbridge Co.: burrowing in shale rubble at base of hill, opposite Denmark Store, 10 miles northwest of Lexington, holotype 232588, and paratypes 232589 UMMZ., other paratypes 42020, collection of the author.

Remarks: Helicodiscus lirellus is closely related to *H. multidens* Hubricht and *H. diadema* Grimm. From the former it differs in having fewer and finer lirae and in having somewhat smaller teeth. From *H. diadema* it differs in not having hairs on the lirae and in the smaller teeth.

In a recent book by Bequaert & Miller (1973, p. 86.) *Helicodiscus triodus* Hubricht, *H. multidens* Hubricht, *H. diadema* Grimm, and *H. saludensis* (Morrison) were placed in the synonomy of *H. parallelus* (Say), apparently without examining specimens or carefully reading the descriptions, as these four species are probably the most distinctive in the genus. Over the years I have collected over 700 lots of *H. parallelus* and I have found it to be a very uniform species which does not intergrade with any of the recently described species. I have never seen the slightest trace of parietal teeth in it, which is a characteristic of all four of the species listed above. They also place *Helicodiscus singleyanus inermis* H. B. Baker in the synonomy of *H. singleyanus* (Pilsbry). The difference in shell sculpture by which these two forms were originally differentiated is a poor character, but differences in size and shape are sufficient to warrant their recognition as distinct species. *H. inermis* is distinctly smaller than *H. singleyanus* and the sutures are not as deeply impressed. *H. jacksoni* is smaller than *H.*

FIGS. 1-3. Mesodon orestes *Hubricht, holotype.*
FIGS. 4-6. Paravitrea mira *Hubricht, holotype.*
FIGS. 7-9. Paravitrea toma *Hubricht, holotype.*
FIGS. 10-12. Helicodiscus lirellus *Hubricht, holotype.*

Photographs provided through the courtesy of Dr. John B. Burch, Museum of Zoology, University of Michigan.

inermis and the umbilicus is larger. These three species are easily separated when their differences are understood, but these differences are hard to describe.

They also recommend that the subgenus *Hebetodiscus* H. B. Baker be raised to the status of a genus. In my opinion it may not be able to survive as a subgenus. There are intermediate species: *H. apex* (C. B. Adams), *H. roundyi* (Morrison, *H. aldrichianus* (Clapp), and *H. tridens* (Morrison). But more important is the probability that it is polyphyletic, that its species are the culmination of different lines of shell degeneration.

On page 85 they make the following statement concerning *H. parallelus* (Say), *H. fimbriatus* Wetherby, *H. salmonaceus* W. G. Binney, and *H. eigenmanni* Pilsbry: "These four species share a disk-like shell, with flattened upper surface, a sculpture of spaced spiral threads, a broad umbilicus, and occasional small internal teeth in the last whorl. The presence and number of these teeth vary, however, sometimes within one population; as the teeth are often resorbed by the snail and their material redeposited later, they provide no reliable specific characters." While in immature shells the set of teeth nearest the aperture may be incompletely developed, in mature shells teeth-transfers cease and the teeth become stable. With mature specimens the teeth are very good characters for the recognition of species.

LITERATURE CITED

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THE ASIAN CLAM *CORBICULA* IN THE UPPER MISSISSIPPI RIVER

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Since its introduction to North America in 1938 the Asian clam, *Corbicula manilensis*, has expanded its range from the Columbia River, south to Baja California, and east to Florida. In the Mississippi River system it has spread from Louisiana and Mississippi north to the upper Ohio River (Stein, 1962; Burch, 1972). In a recent review of this clams' distribution and ecology (Sinclair, 1971) it was thought that its range still excluded the upper Mississippi River, i.e. above Cairo, Illinois.

Studies during the summer of 1974 revealed the presence of *Corbicula manilensis* in an effluent channel of a power generating plant at Lansing, Allamakee Co., northeast Iowa. The heated water of the effluent channel runs for about half a mile before emptying into the Mississippi River about 660 river miles above Cairo, Illinois. A few shells have also been collected along the Iowa side of the Mississippi River just downstream from the entrance of the effluent channel.

There appeared to be a very aggregated distribution of this clam along the bottom of the effluent channel. In some places they were not present, while at other sites their population densities were over 200 per square meter. From preliminary studies on the size-frequency distribution of this clam it appears that there were some clams at least two-years old. During June of 1974 it was noted that clams had a wet weight of either from two to five grams (presumably last years veliger larvae) or from 11 to 22 grams (presumably at least two-years old). Studies are currently being conducted on the growth and survival of different size clams living within enclosures in the effluent channel and in the main channel of the Mississippi River.

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